

WE CLAIM:

1. In a computing environment, a system comprising:
a visual system, the visual system receiving calls from one of a program
and a window desktop manager to construct a hierarchical data structure; and

5 a unified composition engine, the unified composition engine receiving
commands from the visual system, wherein the unified composition engine constructs a
compositor data structure in response to the commands to provide graphics output.

2. The system of claim 1, wherein the unified composition engine comprises
a first composition service decoupled from a second composition service, the first
10 composition service incorporated into the visual system, and configured to provide data
to the second composition service.

3. The system of claim 1, further comprising:
a master resource table included in the visual system, wherein the master
resource table comprises a first list of resource used by one of the application and the
15 desktop window manager; and

a slave resource table included in the unified composition engine, wherein
the slave resource table includes a second list of resources provided to the unified
composition engine, the slave resource table being managed by the master resource table.

4. The system of claim 3, wherein the second list of resources is an inclusive
20 list of resources when compared to the first list of resources.

5. The system of claim 3, wherein the master resource table is responsible for
giving out handles, reference counting handle records, resources and realizations, sending
resources to the slave resource, and controlling the lifetime of the slave resource table
resources.

6. The system of claim 3, wherein the master resource table explicitly controls the lifetime of slave resource table resources via serialized requests.

7. The system of claim 1, wherein the same library is executing the same compositions when the unified composition engine operates in response to the desktop window manager and when the unified composition engine operates in response to a program.

5 protocols for use with the desktop window manager comprise a functional subset of the protocols available when an application is the client.

8. The system of claim 1, wherein protocols for use by the unified composition engine when responsive to the desktop window manager comprise a functional subset of the protocols for use by the unified composition engine when responsive to the program.

9. The system of claim 1, wherein the slave resource table resources are accessed on a single composition thread.

15 10. The system of claim 1, wherein the unified composition engine runs as a single thread and runs in a constant composition loop.

11. The system of claim 1, further comprising additional visual systems that communicate to the unified composition engine such that the graphics output corresponds to the visual systems.

20 12. The system of claim 1, further comprising additional unified composition engines that communicate to the visual system such that multiple graphics outputs are produced that correspond to the visual system.

13. In a computing system, a method comprising:
receiving calls from one of a program and a desktop window manager,
wherein a hierarchical scene structure is constructed in response to the calls;
communicating information that represents changes to the hierarchical
5 data structure to a unified composition engine;
communicating a set resources to the unified composition engine, wherein
the set of resources correspond to a master resource table that is related to the hierarchical
data structure;
updating information in the compositor data structure based on the
10 communicated information;
updating a slave resource table based on the communicated set of
resources, wherein the slave resource table is related to the compositor data structure; and
processing the compositor data structure to output graphics information.

14. The method of claim 13, wherein constructing the hierarchical scene
15 structure process is asynchronously performed in comparison to the processing of the
compositor data structure to produce the output graphics information.

15. The method of claim 13, wherein the slave resource table comprises a list
of resources that is an inclusive list of resources when compared to the master resource
table.

20 16. The method of claim 13, further comprising controlling the lifetime of the
slave resource table resources in response to the master resource table.

17. The method of claim 13, further comprising executing compositions using
the unified composition engine according to a first library when the unified composition
engine operates in response to the desktop window manager and executing compositions
25 using the unified composition engine according to the first library when the unified
composition engine operates in response to a program.

protocols for use with the desktop window manager comprise a functional subset of the protocols available when an application is the client.

18. The method of claim 13, wherein protocols for use by the unified composition engine when responsive to the desktop window manager comprise a functional subset of the protocols for use by the unified composition engine when responsive to the program.

19. The method of claim 13, further comprising accessing the slave resource table resources on a single composition thread.

20. The method of claim 13, further comprising running the unified composition engine as a single thread and in a constant composition loop.

21. The method of claim 13, further comprising communicating additional information and additional sets of resources to the unified composition engine such that the graphics output information corresponds to additional programs.

22. The method of claim 13, further comprising communicating the information and set of resources to multiple unified composition engines such that multiple graphics output information is produced that corresponds to the one of program and desktop window manager.